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**Remarks**

Applicant appreciates the efforts of the Examiner. Applicant has responded herein to all of the Examiner's objections and rejections within the 9/13/05 Office Action. Applicant respectfully requests reconsideration of this application given the arguments provided by the Applicant to the Examiner in this amendment.

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**Examiner's Objections/Rejections, Along with Applicant's Responses****Claim Objections**

The Examiner objects to claims 7 and 15 under 37 CFR 1.85(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. By definition electrolysis is performed by electrodes. Additionally, the limitation that there is no vehicular transportation of said water provides little or no patentable weight.

**Applicant's Response**

Applicant appreciates the Examiner's Objection.

Applicant has respectfully canceled claim 7.

Applicant has respectfully amended claim 15 to recite "wherein there is no vehicular transportation of said H<sub>2</sub>O<sub>2</sub>." Support for this amendment to claim 15 can be found in the specification on page 9 lines 1 and 2, page 9 lines 13 to 14, page 9 line 24 to page 10 line 1, and page 13 lines 11 to 13.

As Applicant has respectfully traversed the Examiner's objection, Applicant respectfully requests allowance of claim 15, as amended herein.

**Claim Rejections – 35 U.S.C. § 112****Claims 9 - 12**

The Examiner has rejected claims 9 – 12 under 35 U.S.C., second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Applicant Response**

Applicant understands and appreciates the Examiner's rejection of claims 9 – 12. Applicant has respectfully amended claims 9 – 12 to state:

"9. The process of claim 1, further comprising a step of distillation.

10. The process of claim 9, wherein said distillation separates said H<sub>2</sub> from at least one of said H<sub>2</sub>SO<sub>4</sub> and said H<sub>2</sub>S<sub>2</sub>O<sub>8</sub>.

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11. The process of claim 9, wherein said distillation separates said  $\text{H}_2\text{O}_2$  from at least one of said  $\text{H}_2\text{SO}_4$  and said  $\text{H}_2\text{S}_2\text{O}_8$ .

12. The process of claim 9, wherein said distillation separates said  $\text{H}_2\text{O}$  from at least one of said  $\text{H}_2\text{SO}_4$  and said  $\text{H}_2\text{S}_2\text{O}_8$ ."

Support for this amendment to claims 9 – 12 can be found in the specification on page 10 line 18 to page 11 line 4. As Applicant has respectfully traversed the Examiner's rejection, Applicant respectfully requests allowance of claims 9 – 12 as amended herein.

**Claim 1**

The examiner has rejected claim 1, as claim 1 requires separation by membrane, however, claims 9 – 12 require separation by distillation, which is contrary to separation by membrane.

**Applicant Response**

Applicant appreciates and understands the Examiner's Rejection.

As reviewed above, Applicant has amended claims 9 – 12; said amendment to claims 9 – 12 respectfully traverses the Examiner's rejection. Applicant respectfully requests allowance of claims 1, 9, 10, 11 and 12 as amended herein.

**Claim 14**

The Examiner has rejected claim 14 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear how water is added to the peroxide from the second stage when it is made in the second stage.

**Applicant Response**

Applicant appreciates and understands the Examiner's Rejection.

Applicant has respectfully amended claim 14 to state "further comprising the addition of  $\text{H}_2\text{O}$  to said  $\text{H}_2\text{O}_2$ ." Support for this amendment to claim 14 can be found in the specification on page 11 lines 20 and 21. Applicant has respectfully traversed

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the Examiner's Rejection and respectfully requests allowance of claim 14 as amended herein.

### **Claim Rejections – 35 U.S.C. 103**

#### **Claims 1 – 15**

Claims 1-15 are rejected by the Examiner under 35 U.S.C. 103(a) as being unpatentable over Eng et al. (Eng), U.S. 3,844,778 in view of Boughton et al. (Boughton), U.S. Patent 4,879,043.

The Eng patent discloses the claimed method of a first stage electrolysis conversion of sulfuric acid into hydrogen gas and persulfuric acid and a second stage where the persulfuric acid and water combine to form hydrogen peroxide and water (see figure 1). The reference further discloses that sulfuric acid and persulfuric acid are reacted with water in the second stage (see figure 1). The reference further discloses the same type of electrodes and cells (see figure 1 and col. 10, lines 48-68). The reference further discloses the distillation separation of sulfuric acid from the other reactants and products (see col. 4, lines 45-57).

The reference does not disclose the purification of the reactants and products by a membrane. The Boughton patent is cited to show the conventional purification of peroxide by membranes (see claims 1-6). The exact type of membrane would have been within the purview of the ordinary artisan.

Consequently, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the disclosure of the Eng patent with the teachings of the Boughton patent, because the Boughton patent teaches that high purity peroxide is obtained by the membrane separation claimed (see abstract).

#### **Applicant Response**

The Applicant understands and appreciates the Examiner's rejection.

The Applicant would like to present to the Examiner excerpts from section 2141 of the MPEP, which form a basis for Applicants argument:

1. "The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art suggests the desirability of the combination."

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2. "A statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the references."
3. "If the proposed modification or combination of the prior art would change the principle operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious."

The Applicant cannot locate within Eng any presentation, discussion, teaching or suggestion to utilize a membrane in the production or the purification of hydrogen peroxide. In addition, Applicant has performed a thorough review of Boughton, wherein there cannot be located any presentation, discussion, teaching or suggestion to manufacture hydrogen peroxide by electrolysis. All of the teachings, including all of the Examples, within Boughton present the purification of a hydrogen peroxide in contrast to the manufacture or a process of manufacture for hydrogen peroxide as presented and taught in the instant invention. In fact, Boughton references in Example 5 the purification of a hydrogen peroxide manufactured by the "alkylanthraquinone process". Specifically, col. 8 lines 31 to 46 state:

"Crude hydrogen peroxide, manufactured by the alkylanthraquinone process, was fed from storage at 20 psig to CAT model 1051 plunger pump capable of pumping 10 gallons of water per minute at 2000 psig. The manifold, adaptors, valves and seals were 316 stainless steel and the plunger was ceramic. The pump raised the pressure to 460 psig. The federate was 7 gpm to the modules (two in parallel) and the temperature was 25 °C. The modules, which were 5.625 inches outside diameter by 48.5 inches long and constructed of wound fiberglass filament epoxy shell, contained a DuPont Permasep® model B-10 fine, hollow fiber aramid (polyamide) with a very thin, dense film at the surface. The discharge from the membranes was 3.5 gpm permeate at less than 20 psi."

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Therefore, there is not within either reference a suggestion or motivation for a person of ordinary skill in the art to combine or modify the cited references in a way which would obtain the instant invention. Further, there is no "objective reason" which can be obtained from either reference to provide to a person of ordinary skill in the art to combine or modify the cited references in a way which would obtain the instant invention. Further yet, as all of the teachings within Boughton are for the "purification" of a hydrogen peroxide, the use of a membrane in the manufacture of hydrogen peroxide to separate water from hydrogen peroxide is against the teachings of Boughton and would change the principal operation of the Boughton invention. This is exemplified by the teachings within Boughton that the membrane not concentrate the hydrogen peroxide. Specifically, col. 5 lines 9 through 20 state:

"The membrane for this process is chosen such that it will allow the hydrogen peroxide and water molecules to permeate while preventing a significant fraction of the impurities from passing through, thereby affecting separation. The hydrogen peroxide and water molecules preferably should permeate at about the same rate so that the resulting hydrogen peroxide solution has about the same concentration as the feed. The permeability of the hydrogen peroxide molecules may be slightly greater or slightly less than that of the water molecules depending on the end-use."

Boughton, having such a teaching, is unable to effectuate the instant invention which teaches on page 10 lines 18 to 19:

"It is most preferred that, in the second stage, the separation of at least one of  $H_2O_2$  and any unreacted  $H_2O$  from at least one of  $H_2S_2O_8$  and  $H_2SO_4$  be performed with membranes."

In addition, Applicant would like to respectfully present to the Examiner "The Foreman Factors" as determined from Appeal 1997-3370 in application 08/472,599. In order for the cited references to enable the instant invention, there is required a teaching which enables. As presented above, there is no such enablement in either cited reference; nor, is there any such enablement upon combining the cited references.

In conclusion, there is no suggestion or motivation within either Eng or Boughton to suggest or motivate one of ordinary skill in the art to combine or modify Eng or Boughton in order to obtain the instant invention. Further, upon combination, the cited

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references when used to practice the instant invention, change the principal operation of the Boughton invention as well as require an operation which is in conflict with the teachings of the Boughton invention. Therefore, Applicant has respectfully traversed the Examiner's rejection. Applicant respectfully requests an allowance of claims 1 – 15, as amended herein.

**Claims 16-17**

Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eng in view of Boughton as applied to claims above, and further in view of Narayanan et al. (Narayanan), U.S. Patent 6,368,492.

The combination of Eng and Boughton fail to use the hydrogen in a fuel cell to produce electricity. The Narayanan patent is cited to show that it is known in the art to use hydrogen to run a fuel cell and produce electricity (see figure 5).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the disclosure of the Eng patent to use the hydrogen produced by electrolysis to run a fuel cell, because the Narayanan patent teaches that hydrogen can run a fuel cell to produce electricity which can then be used to run an electrically driven device.

**Applicant's Response**

The Applicant understands and appreciates the Examiner's rejection.

As the Applicant has respectfully traversed the Examiner's combination of Eng and Boughton above regarding claim 1, Applicant should have an allowability of claim 1. With allowability of claim 1, claims 16 and 17 are allowable as claims 16 and 17 depend upon claim 1. MPEP Section 2143.03 states, "If an independent claim is non-obvious under 35 U.S.C. 103, then any claim depending therefrom is non-obvious *In re Fine*, 837 F2d.1071, 5 USPQ 2d 1596, Fed. Cir. 1988.

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**CONCLUSION**

Applicant has respectfully responded to the Examiner's 9/13/05 Office Action.

Applicant has added no new claims.

Applicant appreciates the time and the effort afforded by the Examiner in this proceeding.

Applicant herein respectfully requests an allowance certificate for the claims as amended herein.

Respectfully submitted,



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**Date: January 13, 2006**

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